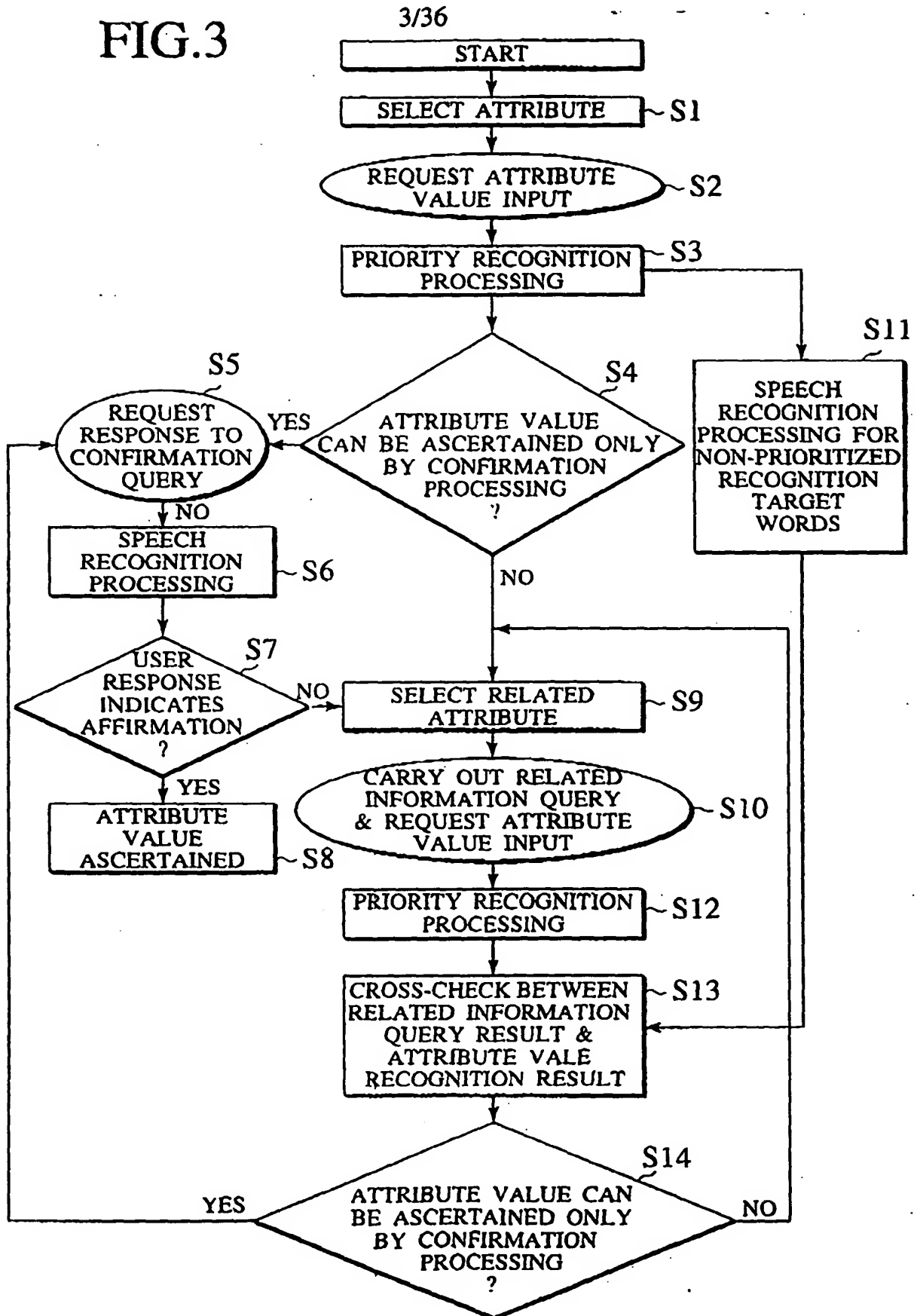


FIG.2

ATTRIBUTE VALUES OF ATTRIBUTE #1	ATTRIBUTE VALUES OF ATTRIBUTE #2	---	ATTRIBUTE VALUES OF ATTRIBUTE # α
ATTRIBUTE VALUE #1 ₁	ATTRIBUTE VALUE #2 ₁	---	ATTRIBUTE VALUE # α_1
ATTRIBUTE VALUE #1 ₁	ATTRIBUTE VALUE #2 ₁	---	ATTRIBUTE VALUE # α_2
ATTRIBUTE VALUE #1 ₁	:	---	ATTRIBUTE VALUE # α_3
ATTRIBUTE VALUE #1 ₁	ATTRIBUTE VALUE #2 ₁	---	ATTRIBUTE VALUE # α_4
:	ATTRIBUTE VALUE #2 ₂	---	:
:	:	---	:
:	ATTRIBUTE VALUE #2 ₃	---	:
ATTRIBUTE VALUE #1 ₁	:	---	:
ATTRIBUTE VALUE #1 ₂	ATTRIBUTE VALUE #2 ₁	---	:
ATTRIBUTE VALUE #1 ₂	:	---	:
:	ATTRIBUTE VALUE #2 _j	---	:
:	:	---	:
ATTRIBUTE VALUE #1 ₂	:	---	:
ATTRIBUTE VALUE #1 ₃	ATTRIBUTE VALUE #2 ₁	---	:
:	:	---	:
ATTRIBUTE VALUE #1 ₃	:	---	:
:	:	---	:
:	:	---	:
:	:	---	:
:	:	---	:
ATTRIBUTE VALUE #1 _n	:	---	:
ATTRIBUTE VALUE #1 _n	:	---	:
:	ATTRIBUTE VALUE #2 _p	---	:
ATTRIBUTE VALUE #1 _n	ATTRIBUTE VALUE #2 _p	---	ATTRIBUTE VALUE # α_2

FIG.3



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FIG.4

ATTRIBUTE VALUES OF ATTRIBUTE #1 (PREFECTURE)	ATTRIBUTE VALUES OF ATTRIBUTE #2 (CITY/TOWN)	ATTRIBUTE VALUES OF ATTRIBUTE #3 (SECTION)
TOKYO	MINATO	ROPPOGI
TOKYO	MINATO	AKASAKA
TOKYO	MINATO	SHIBA
TOKYO	MINATO	DAIBA
TOKYO	MINATO	;
TOKYO	MINATO	;
TOKYO	MINATO	;
TOKYO	;	;
TOKYO	CHUOU	GINZA
TOKYO	CHUOU	NIHONBASHI
TOKYO	CHUOU	;
TOKYO	;	;
TOKYO	CHIYODA	;
TOKYO	CHIYODA	;
TOKYO	;	;
TOKYO	SUGINAMI	;
TOKYO	SUGINAMI	;
;	;	;
KANAGAWA	YOKOHAMA	ISOGO
KANAGAWA	YOKOHAMA	KANAZAWA
KANAGAWA	;	;
KANAGAWA	YOKOSUKA	HIKARINOOKA
KANAGAWA	;	NAGASAWA
KANAGAWA	CHIGASAKI	;
	;	;

FIG.5

OUTPUT ORDER	ATTRIBUTE VALUE (CITY/TOWN) CANDIDATE	RECOGNITION LIKELIHOOD
1	AMAGASAKI	970
2	CHUOU	900
3	YOKKAICHI	820
4	CHIYODA	710
.	.	.
.	.	.
50	YOKOHAMA	.
.	.	.
.	.	.
100	YOKOSUKA	14

DESCENDING
ORDER OF
RECOGNITION
LIKELIHOOD

FIG.6

OUTPUT ORDER	ATTRIBUTE VALUE (CITY/TOWN) CANDIDATE	RECOGNITION LIKELIHOOD
1	CHIGASAKI	1,200
2	TAKASAKI	1,050
3	TAKAMATU	980
4	AMAGASAKI	970
.	.	.
10	YOKKAICHI	820
.	.	.
500	YOKOHAMA	.
.	.	.
.	.	.
2100	NAHA	2

DESCENDING
ORDER OF
RECOGNITION
LIKELIHOOD



CITY/TOWN CONTAINED IN
NON-PRIORITIZED RECOGNITION TARGET WORDS

FIG.7

OUTPUT ORDER	RELATED ATTRIBUTE VALUE CANDIDATE	RECOGNITION LIKELIHOOD
1	KAGAWA	1,020
2	KANAGAWA	1,000
3	ISHIKAWA	910
4	FUKUOKA	870
.	.	.
.	.	.
47	HOKKAIDO	34

DESCENDING
ORDER OF
RECOGNITION
LIKELIHOOD

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FIG.8

OUTPUT ORDER	ATTRIBUTE VALUE (CITY/TOWN) CANDIDATE	RECOGNITION LIKELIHOOD	OUTPUT ORDER	RELATED ATTRIBUTE VALUE CANDIDATE	RECOGNITION LIKELIHOOD
1	CHIGASAKI	1,200	1	KAGAWA	1,020
2	TAKASAKI	1,050	2	KANAGAWA	1,000
3	TAKAMATSU	980	3	ISHIKAWA	910
4	AMAGASAKI	970	4	FUKUOKA	870
.
10	YOKKAICHI	820	.	.	.
.
500	YOKOHAMA
.
.
2100	NAHA	2	47	HOKKAIDO	34

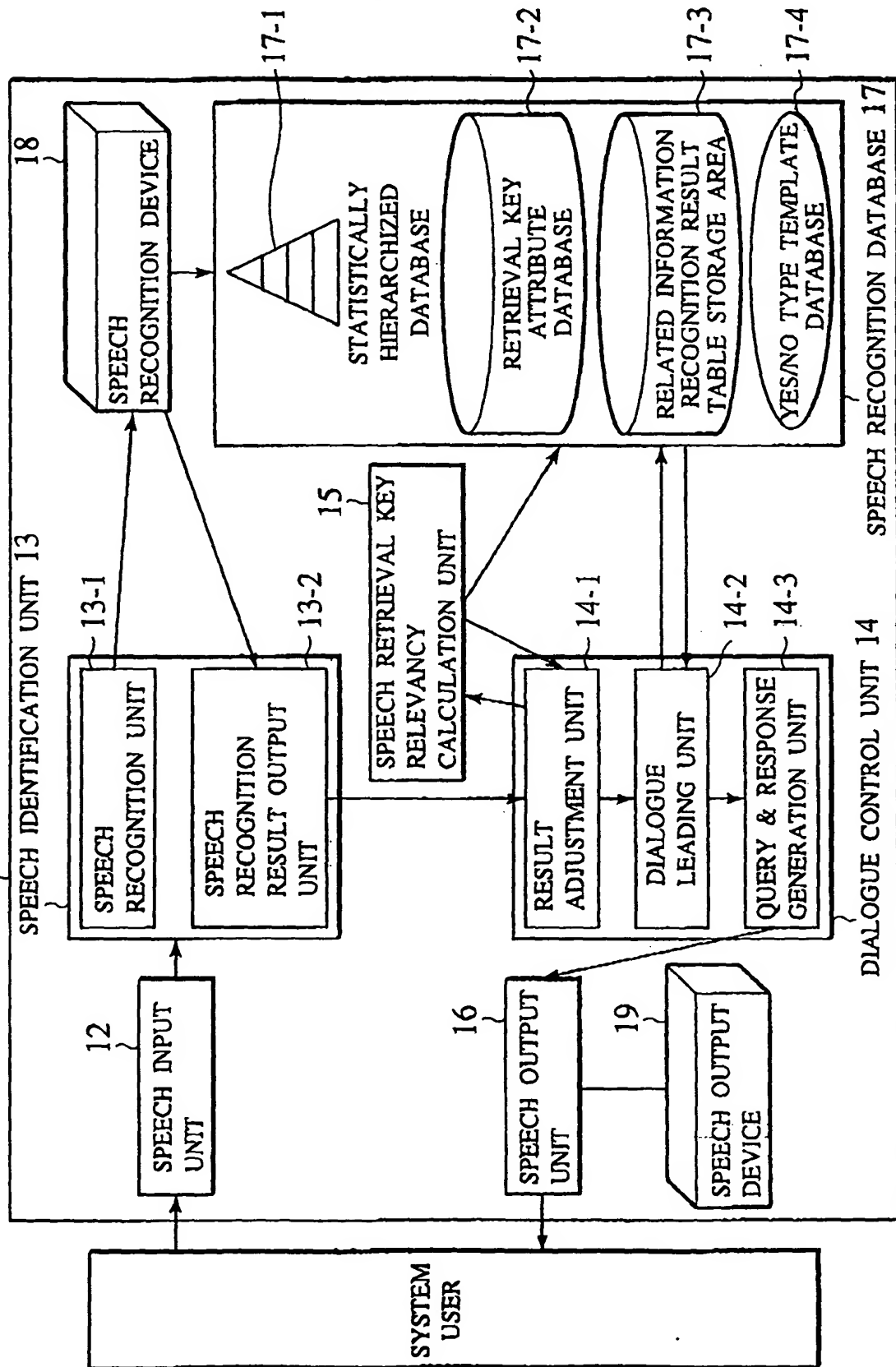
RELATED ATTRIBUTE
RECOGNITION RESULT (FIG.5)

ATTRIBUTE VALUE RECOGNITION RESULT (FIG.4)

OUTPUT ORDER	ATTRIBUTE VALUE (CITY/TOWN) CANDIDATE	CROSS-CHECKED LIKELIHOOD
1	CHIGASAKI,KANAGAWA	1,200,000
2	TAKAMATSU,KAGAWA	1,071,000
3	KANAZAWA,ISHIKAWA	999,800
4	.	.
.	.	.
10	TAKASAKI,GUNMA	640,100
.	.	.
.	.	.
.	.	.
2100	NAHA,OKINAWA	80

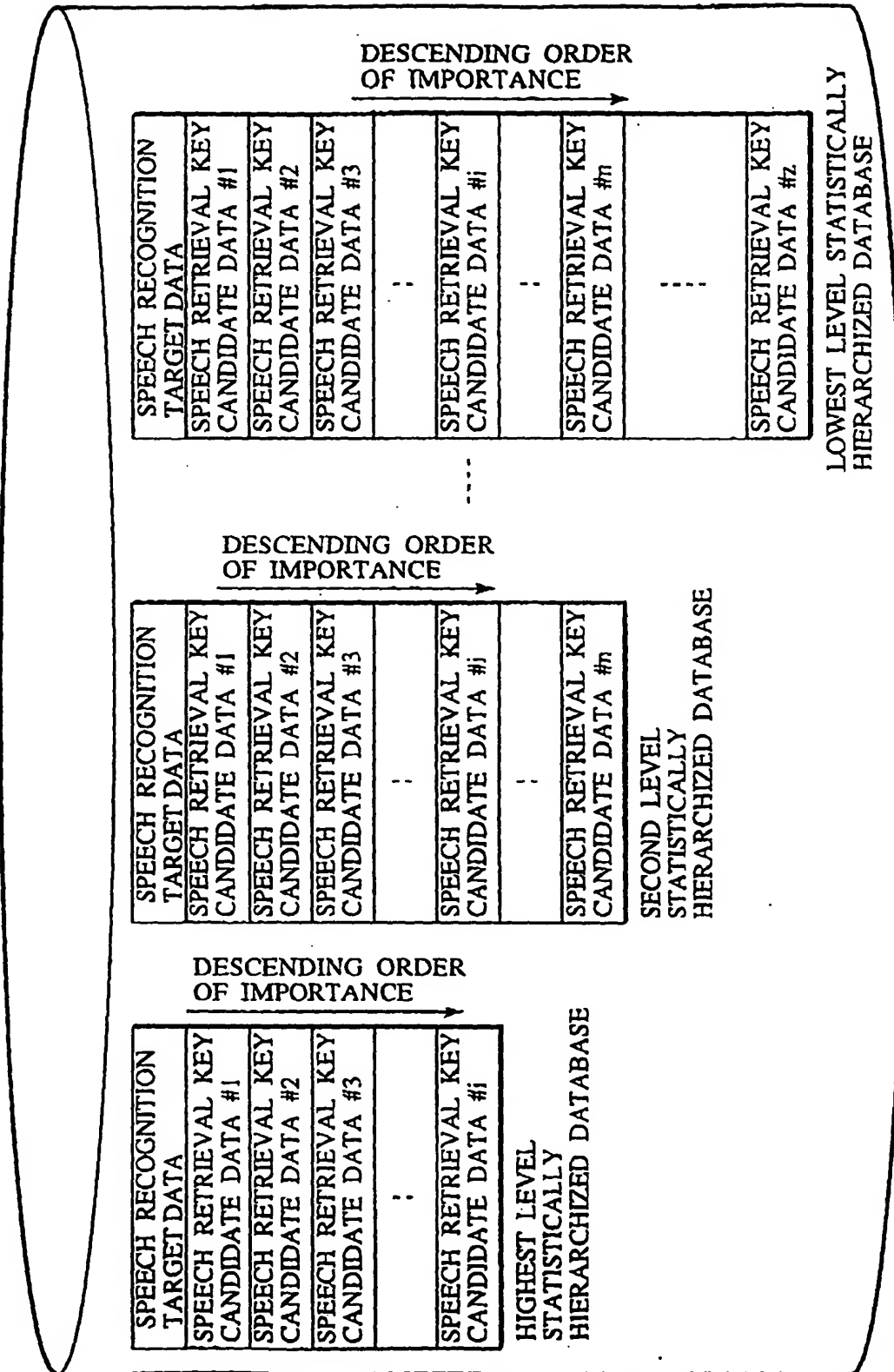
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FIG. 9
 SPEECH RECOGNITION BASED INTERACTIVE INFORMATION RETRIEVAL APPARATUS 11



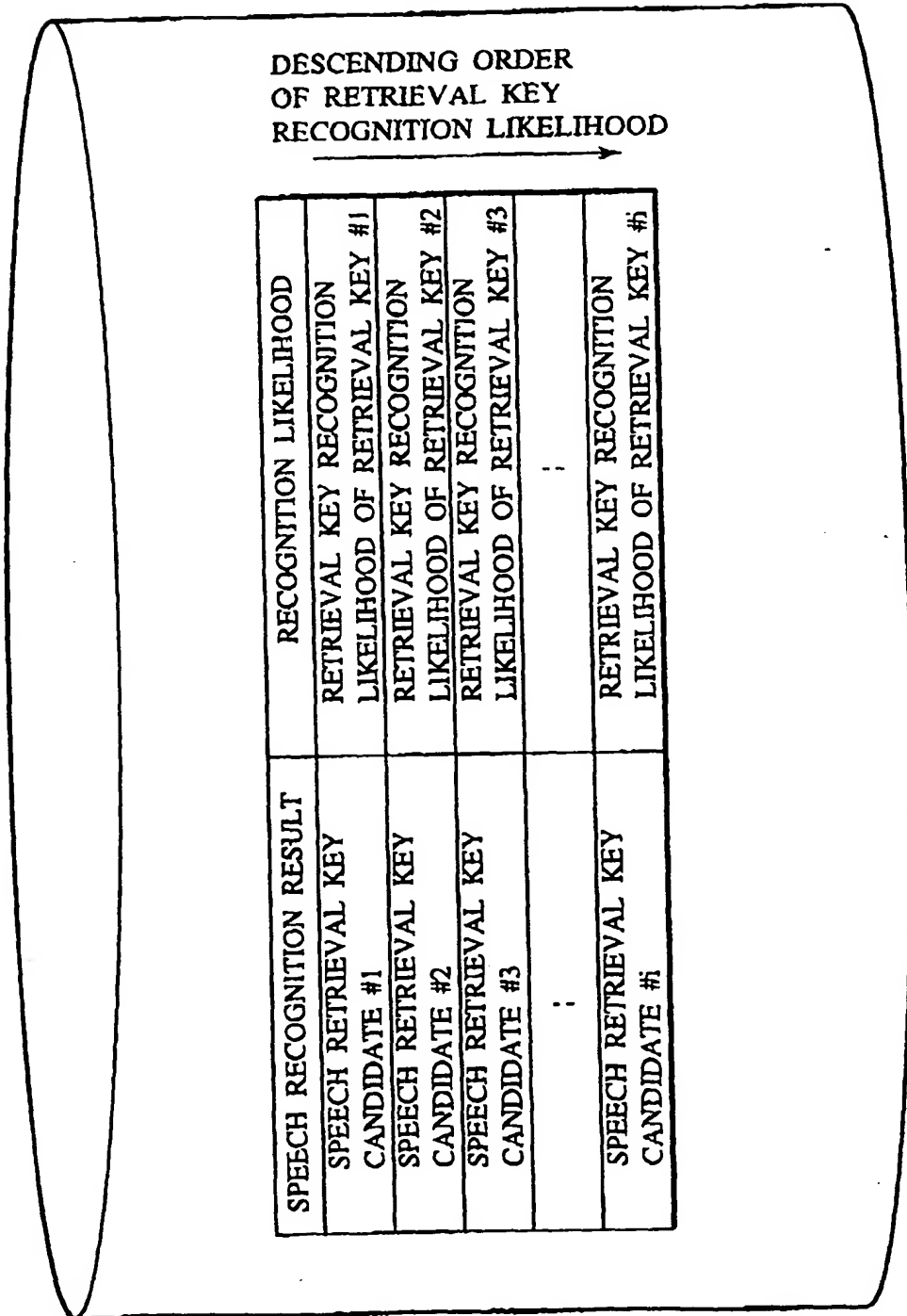
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FIG.10



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FIG.11

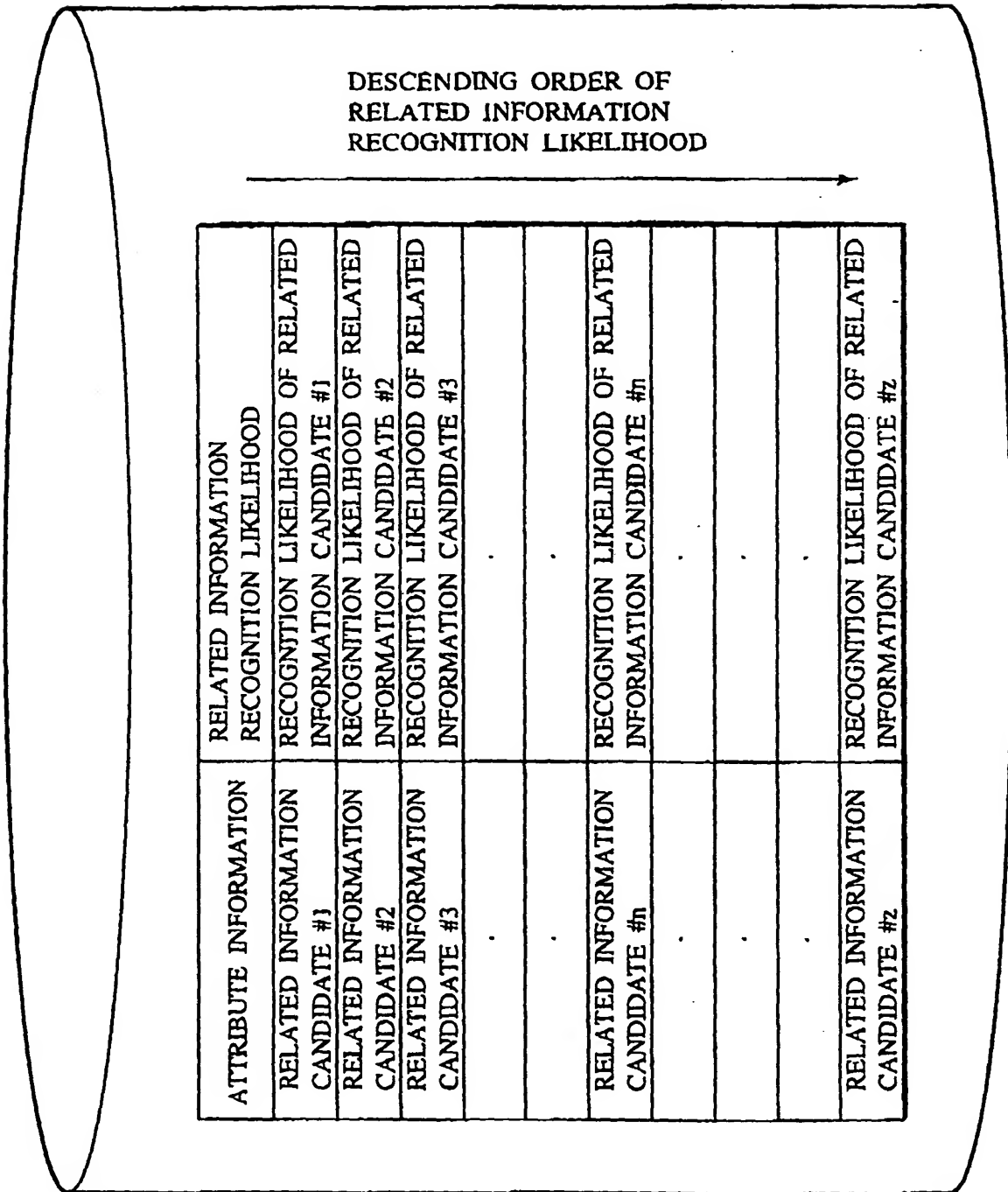


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FIG.12

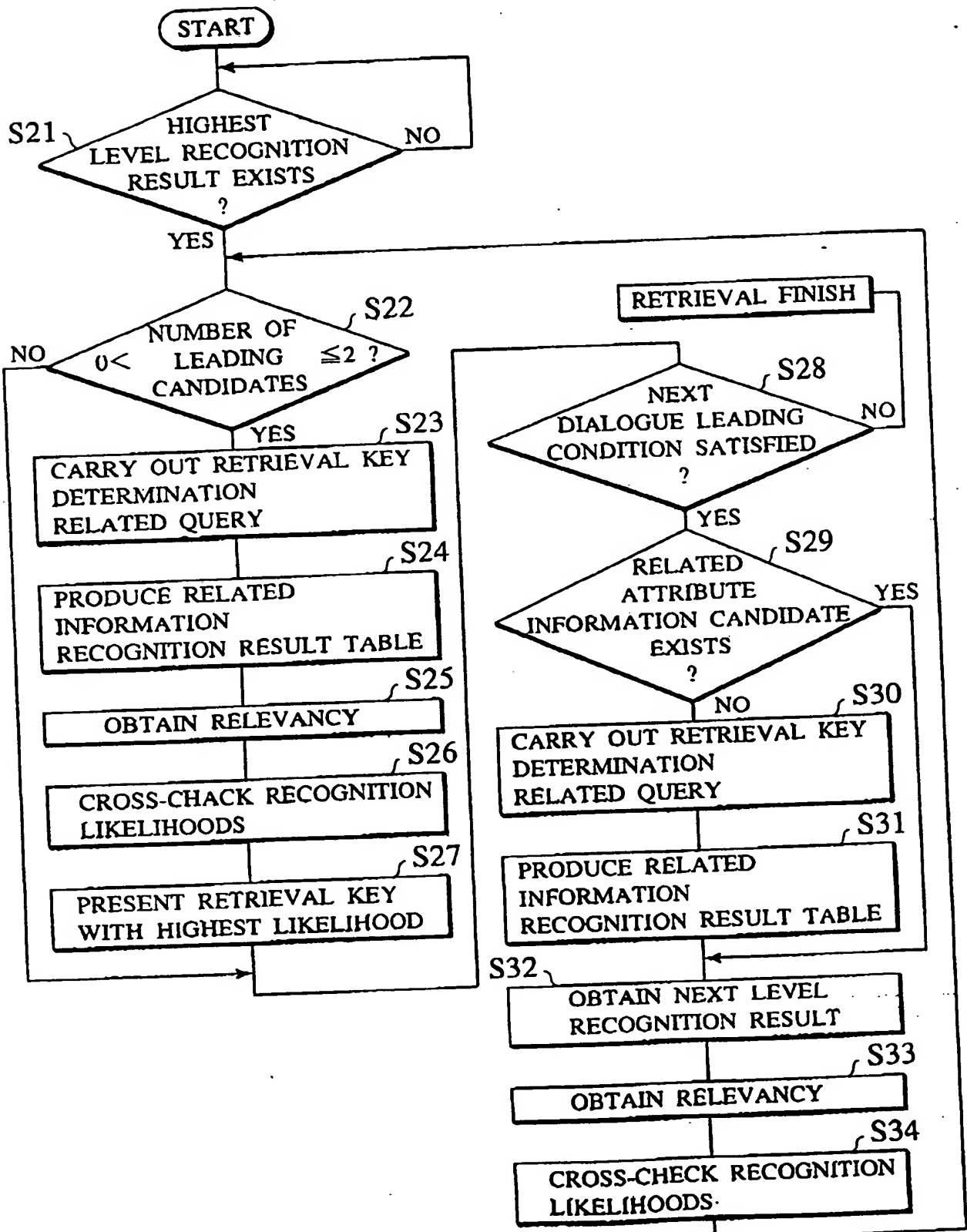
	RELATED ATTRIBUTE #1	•	RELATED ATTRIBUTE #m
SPEECH RETRIEVAL KEY #1	RELATED ATTRIBUTE OF RETRIEVAL KEY #1	•	RELATED ATTRIBUTE OF RETRIEVAL KEY #1
SPEECH RETRIEVAL KEY #2	RELATED ATTRIBUTE OF RETRIEVAL KEY #2	•	RELATED ATTRIBUTE OF RETRIEVAL KEY #2
SPEECH RETRIEVAL KEY #3	RELATED ATTRIBUTE OF RETRIEVAL KEY #3	•	RELATED ATTRIBUTE OF RETRIEVAL KEY #3
.	.	•	.
SPEECH RETRIEVAL KEY #i	RELATED ATTRIBUTE OF RETRIEVAL KEY #i	•	RELATED ATTRIBUTE OF RETRIEVAL KEY #i
.	.	•	.
.	.	•	.
SPEECH RETRIEVAL KEY #n	RELATED ATTRIBUTE OF RETRIEVAL KEY #n	•	RELATED ATTRIBUTE OF RETRIEVAL KEY #n
.	.	•	.
.	.	•	.
.	.	•	.
SPEECH RETRIEVAL KEY #z	RELATED ATTRIBUTE OF RETRIEVAL KEY #z	•	RELATED ATTRIBUTE OF RETRIEVAL KEY #z

FIG.13



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FIG.14



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FIG.15

	1ST LEVEL	2ND LEVEL	3RD LEVEL	4TH LEVEL
1	BERLIN PHILHARMONIC	BERLIN PHILHARMONIC	BERLIN PHILHARMONIC	BERLIN PHILHARMONIC
2	VIENNA PHILHARMONIC	VIENNA PHILHARMONIC	VIENNA PHILHARMONIC	VIENNA PHILHARMONIC
3	NEW YORK PHILHARMONIC	NEW YORK PHILHARMONIC	NEW YORK PHILHARMONIC	NEW YORK PHILHARMONIC
4	LONDON SYMPHONY	LONDON SYMPHONY	LONDON SYMPHONY	LONDON SYMPHONY
5	CHICAGO SYMPHONY	CHICAGO SYMPHONY	CHICAGO SYMPHONY	CHICAGO SYMPHONY
6	BOSTON SYMPHONY	BOSTON SYMPHONY	BOSTON SYMPHONY	BOSTON SYMPHONY
.
.
.
59	VIENNA STATE OPERA	VIENNA STATE OPERA	VIENNA STATE OPERA	VIENNA STATE OPERA
60	METROPOLITAN OPERA	METROPOLITAN OPERA	METROPOLITAN OPERA	METROPOLITAN OPERA
.		.	.	.
.		.	.	.
.		.	.	.
90		GUSTAV LEONHARDT	GUSTAV LEONHARDT	GUSTAV LEONHARDT
.		.	.	.
149		HESPERION XX	HESPERION XX	HESPERION XX
150		CONSORT OF MUSICKE	CONSORT OF MUSICKE	CONSORT OF MUSICKE
.			.	.
.			.	.
.			.	.
.			.	.
.			.	.
249			SEQUENTIA	SEQUENTIA
250			HUEL GAS ENSEMBLE	HUEL GAS ENSEMBLE
.				.
.				.
.				.
.				.
350				LONDON SINFONIETTA

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FIG.16

	SPEECH RETRIEVAL KEY CANDIDATE	RECOGNITION LIKELIHOOD	NORMALIZED LIKELIHOOD
1	LONDON SYMPHONY	4,500	0.0375
2	BOSTON SYMPHONY	4,300	0.0358
3	NEW YORK PHILHARMONIC	3,900	0.0325
4	VIENNA STATE OPERA	3,700	0.0308
5	METROPOLITAN OPERA	3,700	0.0308
6	CHICAGO SYMPHONY	3,400	0.0283
.	.	.	.
.	.	.	.
60	PHILHARMONIA ORCHESTRA	1,600	0.0133
TOTAL		120,000	1.0000

DESCENDING
ORDER OF RETRIEVAL
KEY RECOGNITION
LIKELIHOOD

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FIG.17

	RETRIEVAL KEY CANDIDATE	DATE	PLACE	DAY OF WEEK	PREFECTURE	STYLE
1	BERLIN PHILHARMONIC	APRIL 12	OPERA CITY	MON	TOKYO	ORCHESTRA
2	VIENNA PHILHARMONIC	MAY 30	SYMPHONY HALL	SUN	OSAKA	ORCHESTRA
3	NEW YORK PHILHARMONIC	APRIL 3	OPERA CITY	SAT	TOKYO	ORCHESTRA
4	LONDON SYMPHONY	MAY 30	SYMPHONY HALL	SUN	OSAKA	ORCHESTRA
5	CHICAGO SYMPHONY	APRIL 20	SUNTORY HALL	TUE	TOKYO	ORCHESTRA
6	BOSTON SYMPHONY	APRIL 10	OPERA CITY	SAT	TOKYO	ORCHESTRA
.
.
59	VIENNA STATE OPERA	APRIL 20	NHK HALL	TUE	TOKYO	OPERA
60	METROPOLITAN OPERA	APRIL 21	NHK HALL	WED	TOKYO	OPERA
.
.
90	GUSTAV LEONHARDT	MARCH 3	CASALS HALL	WED	TOKYO	BAROQUE
.
149	HESPERION XX	MARCH 30	FESTIVAL HALL	TUE	OSAKA	BAROQUE
150	CONSORT OF MUSICKE	APRIL 10	SUNTORY HALL	SAT	TOKYO	BAROQUE
.
.
.
249	SEQUENTIA	APRIL 2	ORCHARD HALL	FRI	TOKYO	RENAISSANCE
250	HUEL GAS ENSEMBLE	APRIL 21	TOKYO CATHEDRAL	WED	TOKYO	RENAISSANCE
.
.
350	LONDON SINFONIETTA	MARCH 3	FESTIVAL HALL	WED	OSAKA	CONTEMPORARY

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FIG.18

	ATTRIBUTE INFORMATION CANDIDATE	RELATED INFORMATION LIKELIHOOD	NORMALIZED LIKELIHOOD
1	MARCH 5	5,600	0.0102
2	MARCH 10	5,400	0.0098
3	MARCH 4	4,800	0.0090
4	APRIL 10	4,400	0.0080
5	MARCH 3	4,200	0.0077
6	APRIL 3	3,500	0.0064
7	MARCH 30	3,000	0.0055
.	.	.	.
.	.	.	.
61	APRIL 20	1,100	0.0020
TOTAL		549,000	1.0000

DESCENDING
 ORDER OF
 RELATED
 INFORMATION
 LIKELIHOOD

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FIG.19

	SPEECH RETRIEVAL KEY CANDIDATE	RECOGNITION LIKELIHOOD	NORMALIZED LIKELIHOOD
1	HESPERION XX	4,200	0.0080
2	CONSORT OF MUSICKE	4,020	0.0077
3	LONDON SYMPHONY	3,900	0.0074
4	GUSTAV LEONHARDT	3,800	0.0072
5	BOSTON SYMPHONY	3,500	0.0067
6	CHICAGO SYMPHONY	2,800	0.0053
.	.	.	.
.	.	.	.
60	ENSEMBLE ORGANUM	1,900	0.0036
.	.	.	.
.	.	.	.
150	GOTHIC VOICES	240	0.0004
TOTAL		525,000	1.0000

DESCENDING
ORDER OF
RETRIEVAL
KEY
RECOGNITION
LIKELIHOOD

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FIG.20

RETRIEVAL KEY
ATTRIBUTE DATABASE

SPEECH RETRIEVAL KEY CANDIDATE	RECOGNITION LIKELIHOOD	NORMALIZED LIKELIHOOD
1 HESPERION XX	4,200	0.0080
2 CONSORT OF MUSICKE	4,020	0.0077
3 LONDON SYMPHONY	3,900	0.0074
4 GUSTAV LEONHARDT	3,800	0.0072
5 BOSTON SYMPHONY	3,500	0.0067
6 CHICAGO SYMPHONY	2,800	0.0053
.	.	.
.	.	.
60 ENSEMBLE ORGANUM	1,900	0.0036
.	.	.
.	.	.
150 GOTHIC VOICES	240	0.0004
	525,000	1.0000

SPEECH RECOGNITION RESULT TABLE FOR
SECOND STATISTICALLY HIERARCHIZED DATABASE

	ATTRIBUTE INFORMATION CANDIDATE	RELATED INFORMATION LIKELIHOOD	NORMALIZED LIKELIHOOD
1	MARCH 5	5,600	0.0102
2	MARCH 10	5,400	0.0098
3	MARCH 5	4,800	0.0090
4	APRIL 10	4,400	0.0080
5	MARCH 3	4,200	0.0077
6	APRIL 3	3,500	0.0064
7	MARCH 30	3,000	0.0055
.	.	.	.
.	.	.	.
61	MARCH 31	1,100	0.0020
TOTAL	.	549,000	1.0000

RELATED INFORMATION RECOGNITION
RESULT TABLE

	SPEECH RECOGNITION RESULT	NEW RECOGNITION LIKELIHOOD	NORMALIZED NEW LIKELIHOOD	RENEWED LIKELIHOOD THRESHOLD
1	CONSORT OF MUSICKE	0.000062	0.2897	
2	GUSTAV LEONHARDT	0.000056	0.2593	
3	BOSTON SYMPHONY	0.000054	0.2523	
4	HESPERION XX	0.000044	0.2056	
5	LONDON SYMPHONY	0.000000	0.0000	
		0.000216	1.0000	

INITIAL LIKELIHOOD THRESHOLD

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FIG.21

	ATTRIBUTE INFORMATION CANDIDATE	RELATED INFORMATION LIKELIHOOD	NORMALIZED LIKELIHOOD
1	CASALS HALL	4,200	0.0833
2	ORCHARD HALL	3,900	0.0774
3	FESTIVAL HALL	3,700	0.0734
4	SYMPHONY HALL	2,200	0.0436
5	NHK HALL	2,000	0.0397
6	SUNTORY HALL	2,000	0.0397
.	.	.	.
.	.	.	.
40	OPERA CITY	1,400	0.0278
TOTAL		50,400	1.0000

DESCENDING
ORDER OF
RELATED
INFORMATION
LIKELIHOOD

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FIG.22

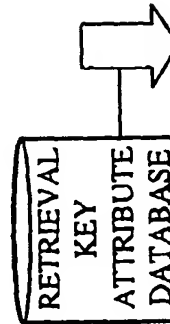
SPEECH RECOGNITION RESULT	NEW RECOGNITION LIKELIHOOD	NORMALIZED NEW LIKELIHOOD
1 CONSORT OF MUSICKE	0.000062	0.2897
2 GUSTAV LEONHARDT	0.000056	0.2593
3 BOSTON SYMPHONY	0.000034	0.2523
4 HESPERION XX	0.000044	0.2056
5 LONDON SYMPHONY	0.000000	0.0000
	0.000216	1.0000

RESULT OF CROSS-CHECKING SECOND LEVEL
 SPEECH RECOGNITION RESULT & CONCERT DATE

LIKELIHOOD
THRESHOLD

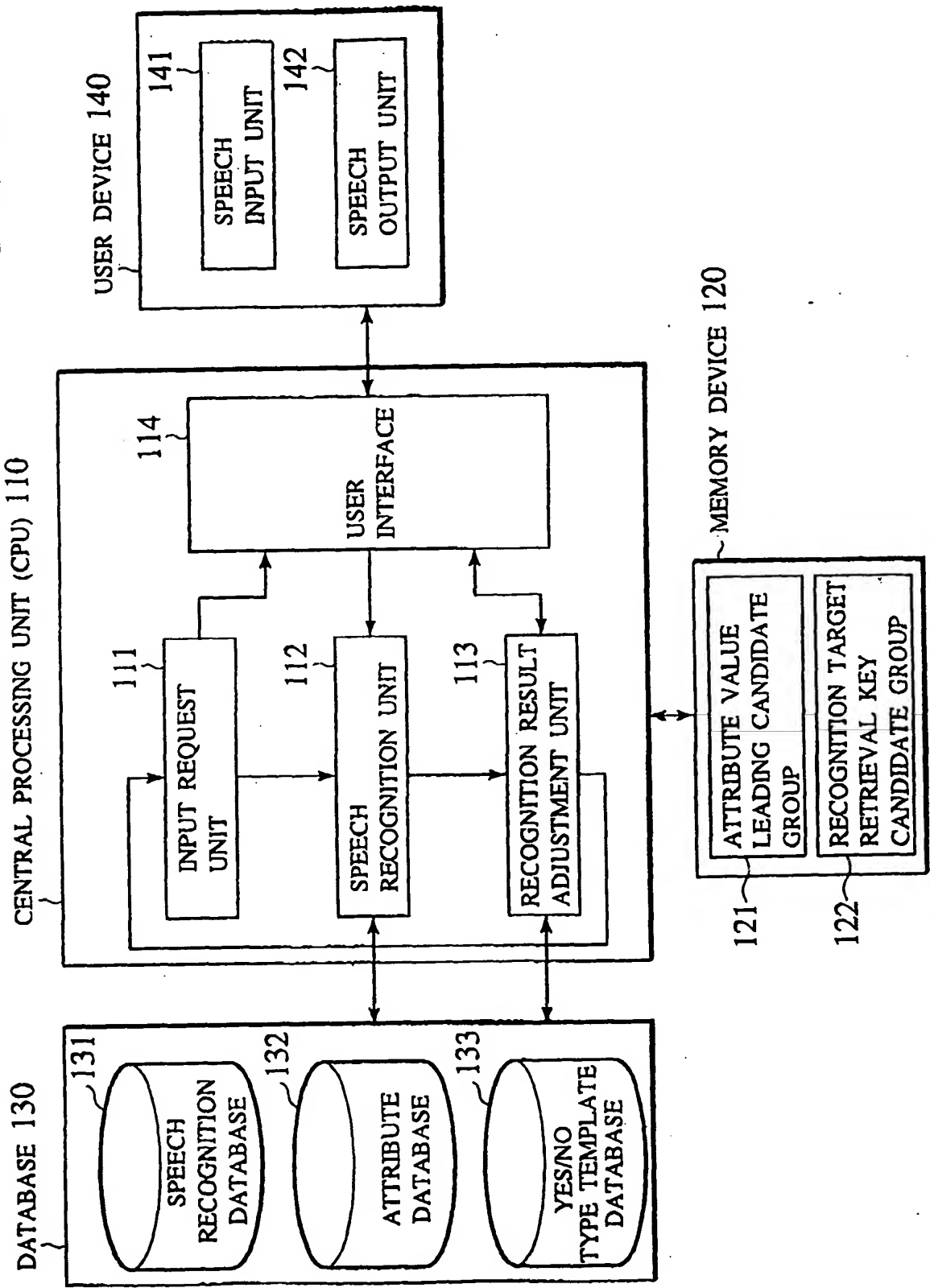
	ATTRIBUTE INFORMATION CANDIDATE	RELATED INFORMATION LIKELIHOOD	NORMALIZED LIKELIHOOD
1	CASALS HALL	4,200	0.0833
2	CRCHARD HALL	3,900	0.0774
3	FESTIVAL HALL	3,700	0.0734
4	SYMPHONY HALL	2,200	0.0436
5	NHK HALL	2,000	0.0397
6	SUNTORY HALL	2,000	0.0397
.	.	.	.
.	.	.	.
40	OPERA CITY	1,400	0.0278
		50,400	1.0000

PLACE AS RELATED INFORMATION
 RECOGNITION RESULT TABLE



	SPEECH RECOGNITION RESULT	NEW RECOGNITION LIKELIHOOD	NORMALIZED NEW LIKELIHOOD
1	GUSTAV LEONHARDT	0.02160	0.6123
2	CONSORT OF MUSICKE	0.01150	0.3260

FIG.23



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FIG.24

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RETRIEVAL KEY CANDIDATE	ATTRIBUTE ITEM #1	ATTRIBUTE ITEM #2	.	.	ATTRIBUTE ITEM #n
RETRIEVAL KEY #1	ATTRIBUTE VALUE #1-10	ATTRIBUTE VALUE #2-2	.	.	ATTRIBUTE VALUE #n-11
RETRIEVAL KEY #2	ATTRIBUTE VALUE #1-2	ATTRIBUTE VALUE #2-9	.	.	ATTRIBUTE VALUE #n-1
RETRIEVAL KEY #3	ATTRIBUTE VALUE #1-k	ATTRIBUTE VALUE #2-12	.	.	ATTRIBUTE VALUE #n-k
.
.
RETRIEVAL KEY #k	ATTRIBUTE VALUE #1-5	ATTRIBUTE VALUE #2-21	.	.	ATTRIBUTE VALUE #n-3

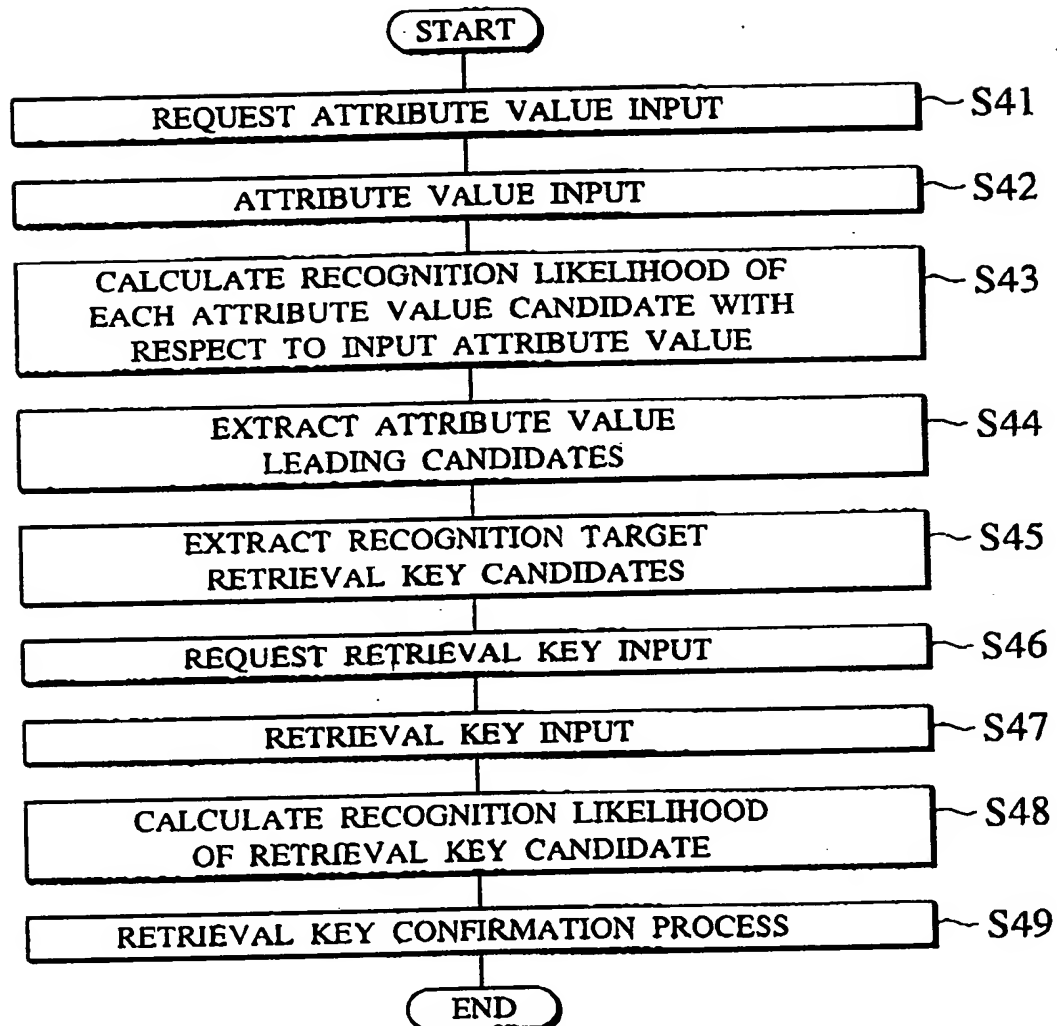
FIG.25

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ATTRIBUTE ITEM #1	ATTRIBUTE ITEM #2	.	.	ATTRIBUTE ITEM #n
ATTRIBUTE VALUE CANDIDATE #1-1	ATTRIBUTE VALUE CANDIDATE #2-1	.	.	ATTRIBUTE VALUE CANDIDATE #n-1
ATTRIBUTE VALUE CANDIDATE #1-2	ATTRIBUTE VALUE CANDIDATE #2-2	.	.	ATTRIBUTE VALUE CANDIDATE #n-2
ATTRIBUTE VALUE CANDIDATE #1-3	ATTRIBUTE VALUE CANDIDATE #2-3	.	.	ATTRIBUTE VALUE CANDIDATE #n-3
.
.
ATTRIBUTE VALUE CANDIDATE #1-k	ATTRIBUTE VALUE CANDIDATE #2-k	.	.	ATTRIBUTE VALUE CANDIDATE #n-k

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FIG.26



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FIG.27

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RETRIEVAL KEY CANDIDATE	PREFECTURE	DISTRICT	.	.	SEASIDE OR NOT
SAPPORO	HOKKAIDO	HOKKAIDO	.	.	NO
ASAHIKAWA	HOKKAIDO	HOKKAIDO	.	.	YES
.
YOKOHAMA	KANAGAWA	KANTO	.	.	YES
.
NAHA	OKINAWA	KYUSHU	.	.	YES

FIG.28

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PREFECTURE	DISTRICT	.	.	SEASIDE OR NOT	
HOKKAIDO	HOKKAIDO	.	.	YES	
AOMORI	TOHOKU	.	.	NO	
AKITA	KANTO	.	.		
.	TOKAI	.	.		
KANAGAWA	KINKI	.	.		
TOKYO	HOKURIKU	.	.		
.	SANIN				
.	SHIKOKU				

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FIG.29

ORDER	ATTRIBUTE VALUE CANDIDATE	RECOGNITION LIKELIHOOD
1ST	KAGAWA	0.945
2ND	KANAGAWA	0.899
3RD	ISHIKAWA	0.783
.	.	.
.	.	.
.	.	.
47TH	FUKUI	0.212

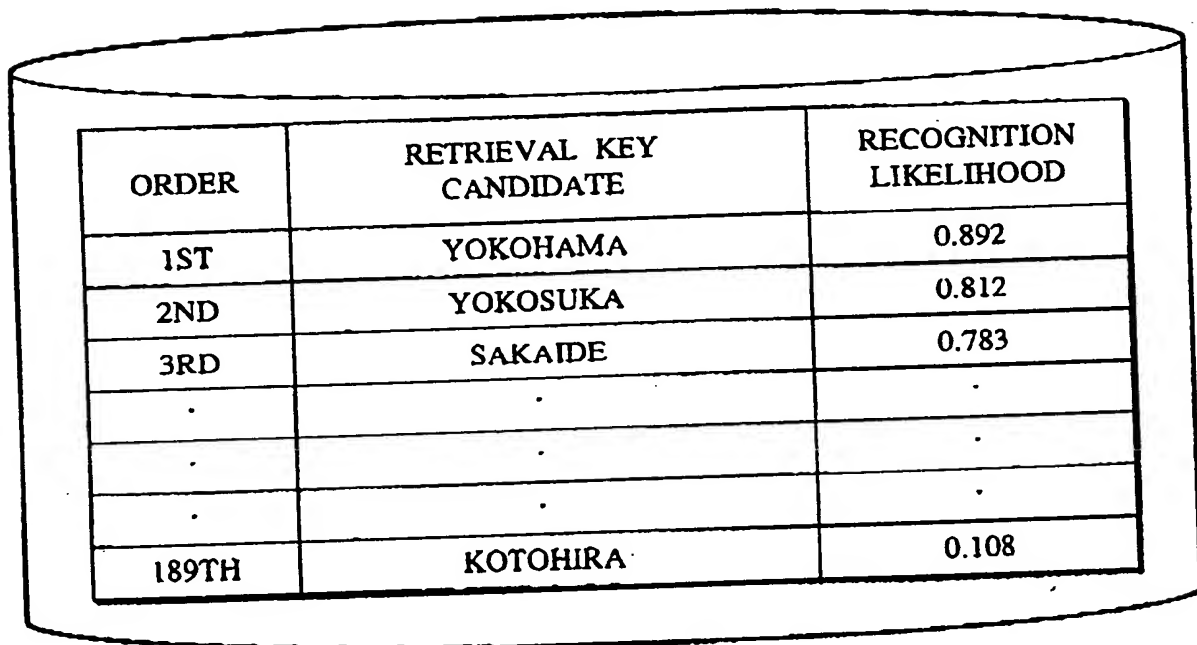
FIG.30

RECOGNITION TARGET CITY/TOWN	ATTRIBUTE VALUE
YOKOHAMA	KANAGAWA
YOKOSUKA	KANAGAWA
KAWASAKI	KANAGAWA
KAMAKURA	KANAGAWA
.	KANAGAWA
.	.
.	.
.	.
KAGAWA	KAGAWA
TAKAMATSU	KAGAWA
SAKAIDE	KAGAWA
KOTOHIRA	KAGAWA
.	.

189 RETRIEVAL KEY
CANDIDATES SELECTED

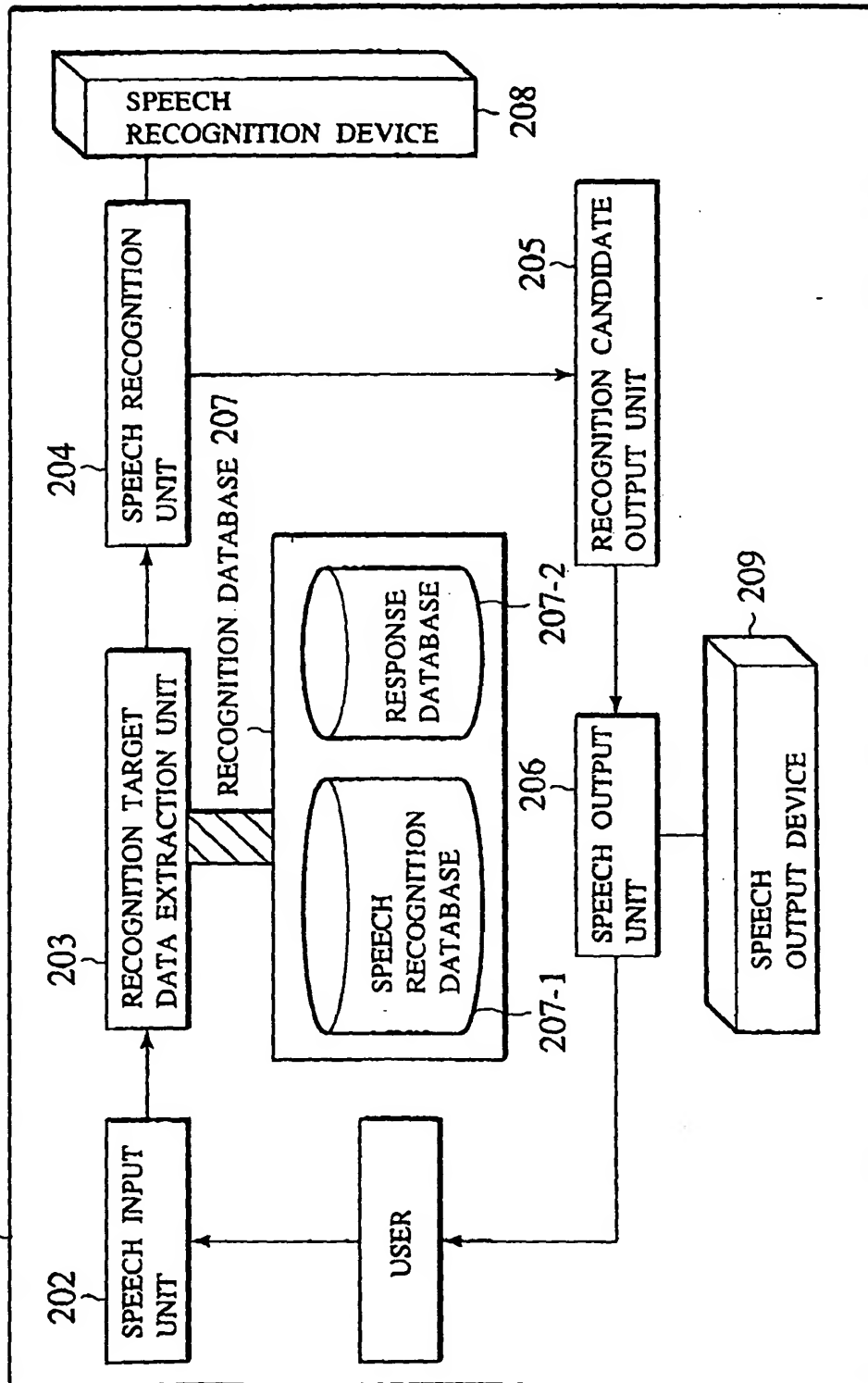
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FIG.31



ORDER	RETRIEVAL KEY CANDIDATE	RECOGNITION LIKELIHOOD
1ST	YOKOHAMA	0.892
2ND	YOKOSUKA	0.812
3RD	SAKAIDE	0.783
.	.	.
.	.	.
.	.	.
189TH	KOTOHIRA	0.108

FIG.32
SPEECH RECOGNITION BASED INTERACTIVE INFORMATION RETRIEVAL APPARATUS 201



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FIG.33

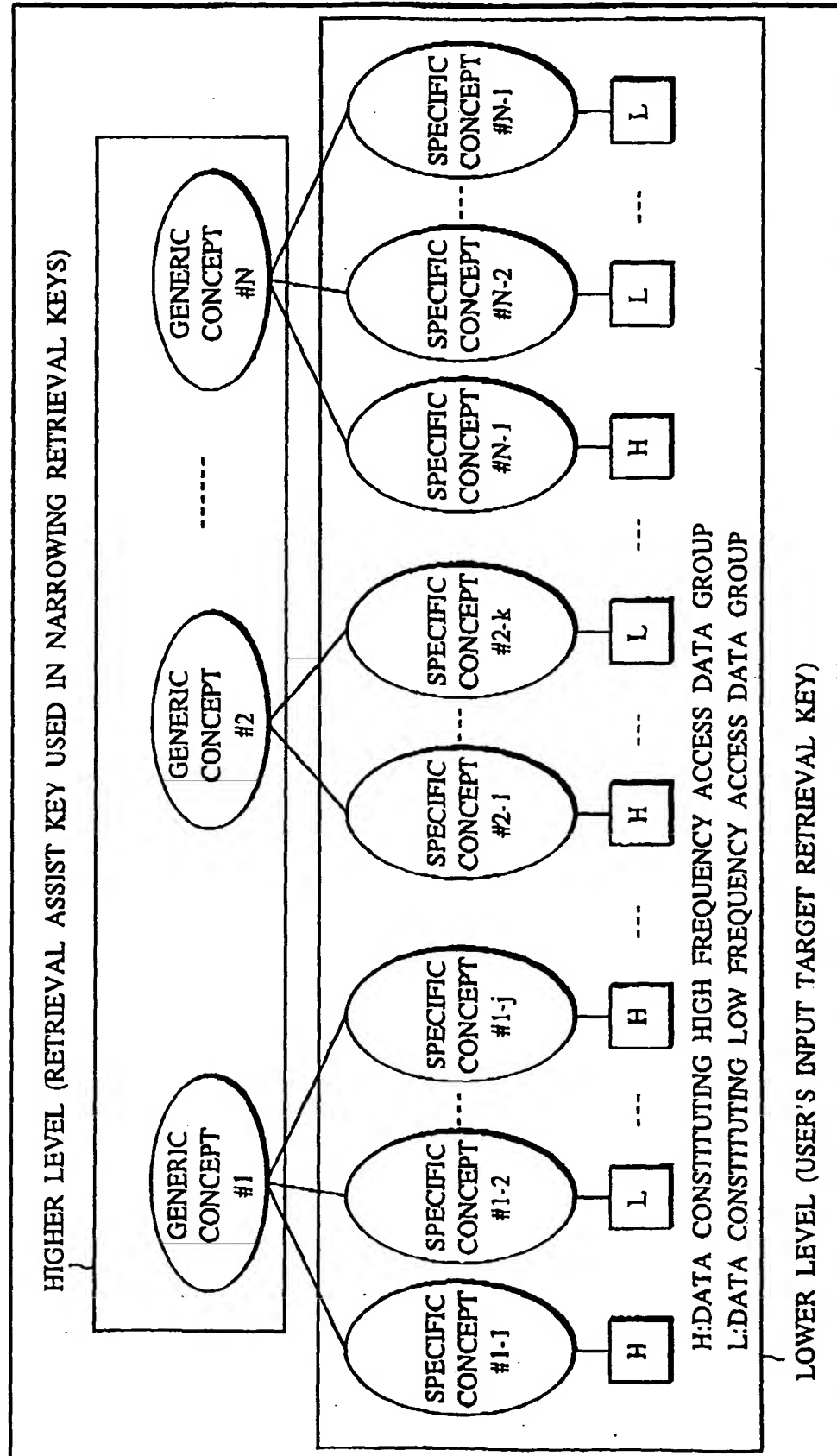
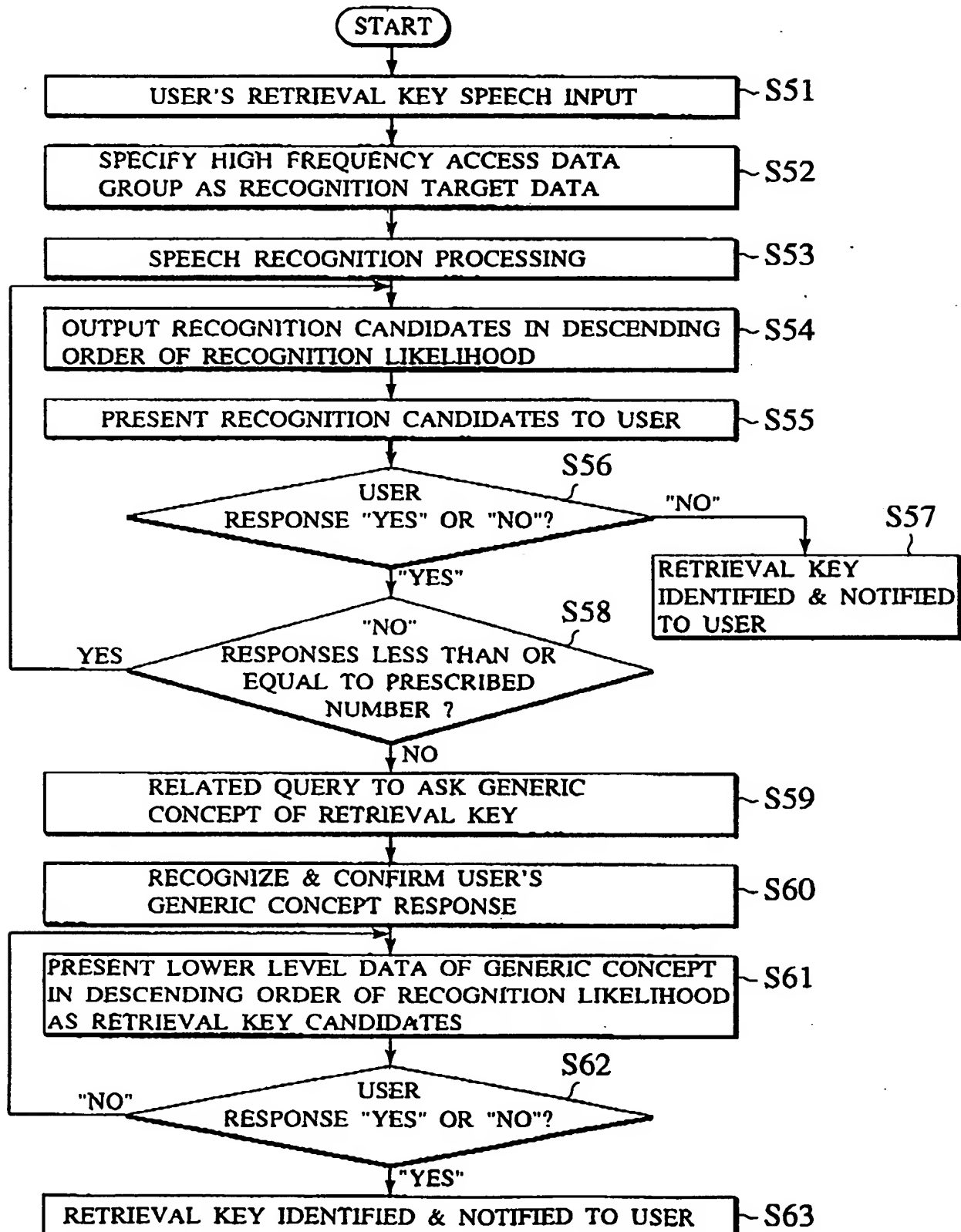


FIG.34



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FIG.35

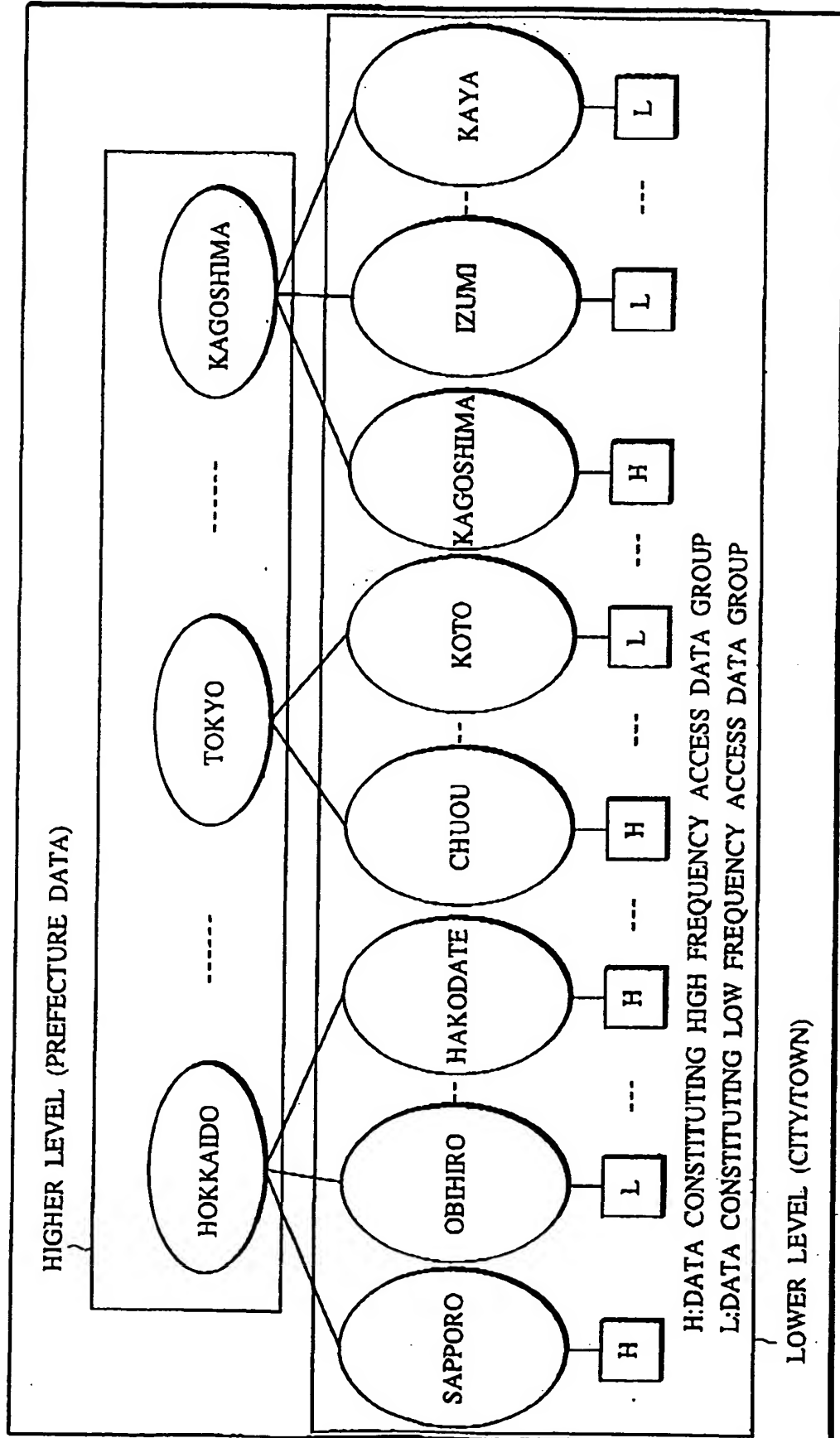


FIG.36

ACCESS FREQUENCY	CITY/TOWN
1ST	MINATO
2ND	CHUOU
3RD	SHIBUYA
4TH	YOKOHAMA
5TH	SHINJUKU
.	.
.	.
49TH	OSAKA
50TH	MAIHAMA

DESCENDING
ORDER OF
ACCESS
FREQUENCY

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FIG.37

ORDER	CITY/TOWN
1ST	YOKOSUKA
2ND	YOKOHAMA
3RD	YOTSUGI
4TH	MAIHAMA
.	.
.	.
50TH	MINATO

DESCENDING
ORDER OF
RECOGNITION
LIKELIHOOD

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FIG.38

ORDER	CITY/TOWN
1ST	YOKOHAMA
2ND	YOKOSUKA
3RD	YOKOYAMA
4TH	MIHAMA
.	.
.	.
50TH	CHIBA

DESCENDING
ORDER OF
RECOGNITION
LIKELIHOOD

FIG.39

ORDER	CITY/TOWN
1ST	YOKOKAWA
2ND	TAKASAKI
3RD	MAEHASHI
.	.
.	.
.	.
41TH	KIRYU

DESCENDING
ORDER OF
RECOGNITION
LIKELIHOOD